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CLIP CARDS FOR EXPERIMENTS

The method used at the Regional Research Station, Samaru, for the classification of experiment records.

by

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Introduction

One of the main functions of the Agronomy Section at the Regional Research Station is the analysis and classification of experiment records.

Experiments conducted by all branches of the Research Division are sited not only on the Samaru farms but also at the Research Substations at Kano, Katsina, Mokwa and Kabba. Large numbers of trials are sited at Ministry Farms and on farmers' own fields throughout Northern Nigeria.

To keep track of the results of these many experiments a system of classification using "clip cards" was introduced by W. E. Freeman and later modified by J. H. Gisborne. All experiments dating back to 1948 have been entered on "clip cards", while cards have been prepared, as far as possible, for earlier trials.

The Freeman and Gisborne system had been adequate to cover the Regional Experimental programme as it existed but with the recent expansion in agricultural research it has been found essential to develop a less confined system.

Among the factors that have made the present modifications necessary are the replacement of some old experimental stations by new ones, an increase in the total number of stations and a large increase in the total number of experiments being carried out each year.

A Comparison of the Two Systems

The new system has called for the introduction of a completely new card. A comparison of the two types of card is shown in Figures 1 and 2.

When discussing the layout of the cards, the position of the codes on both old and new cards is referred to by the notations north, east, south and west, north being the top or unclipped edge on the front face of the card.

The Old Card

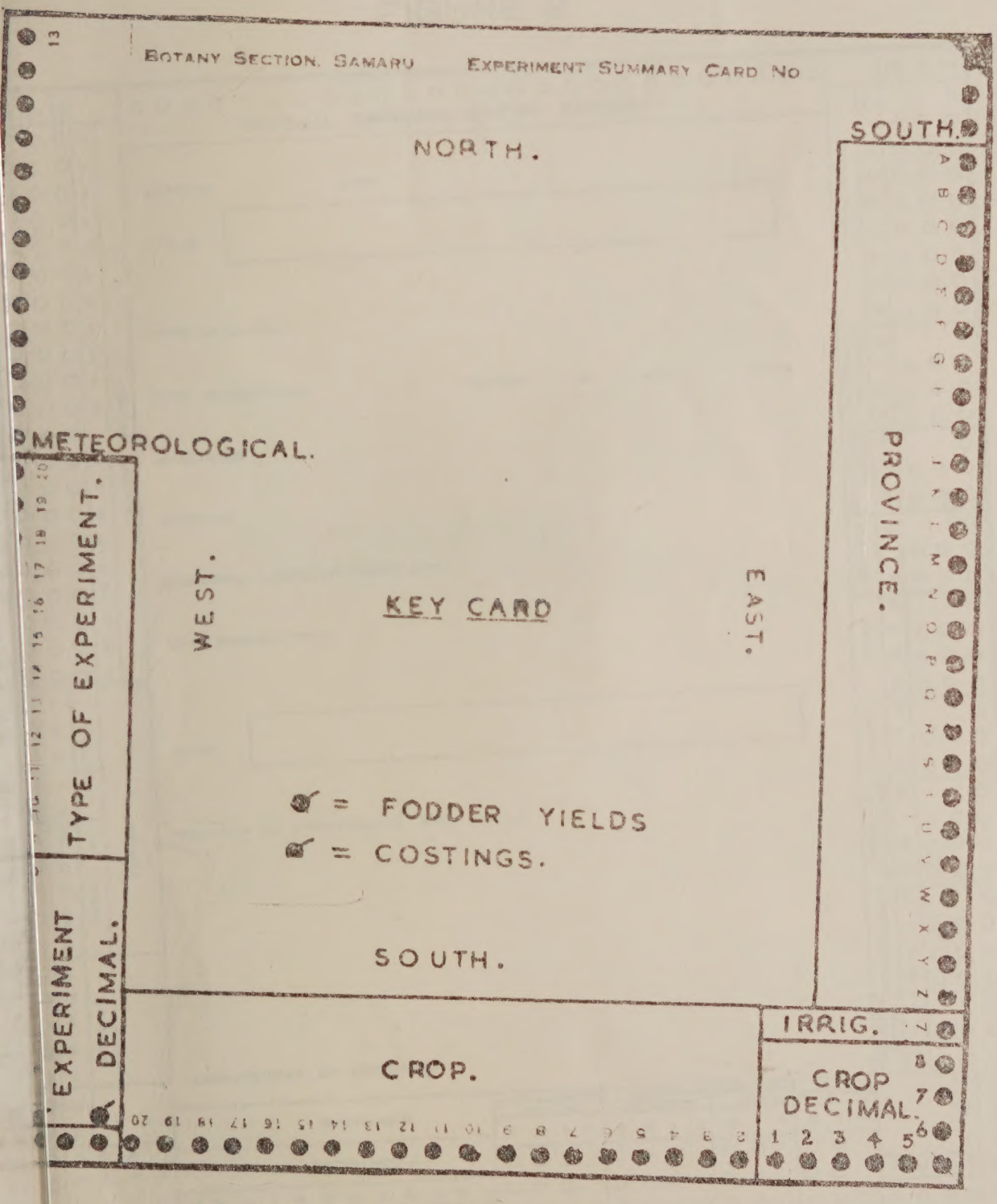
The original clip card was limited in the number of holes, having twenty six for stations, twenty for crops and ten for types of experiments. There was originally a notation in the south-east corner for clipping the year in which the experiment was conducted but it was found that the resulting heavy clipping on this corner led to difficulty when sorting. In 1955 the year holes were converted to a crop decimal. This change in coding requires the filing of pre-1955 and post-1954 cards separately.

The New Card

The newly adopted card, as shown in Figure 2, has smaller holes at a closer spacing and up to three rows of holes are being used, whereas the old card had but a single row.

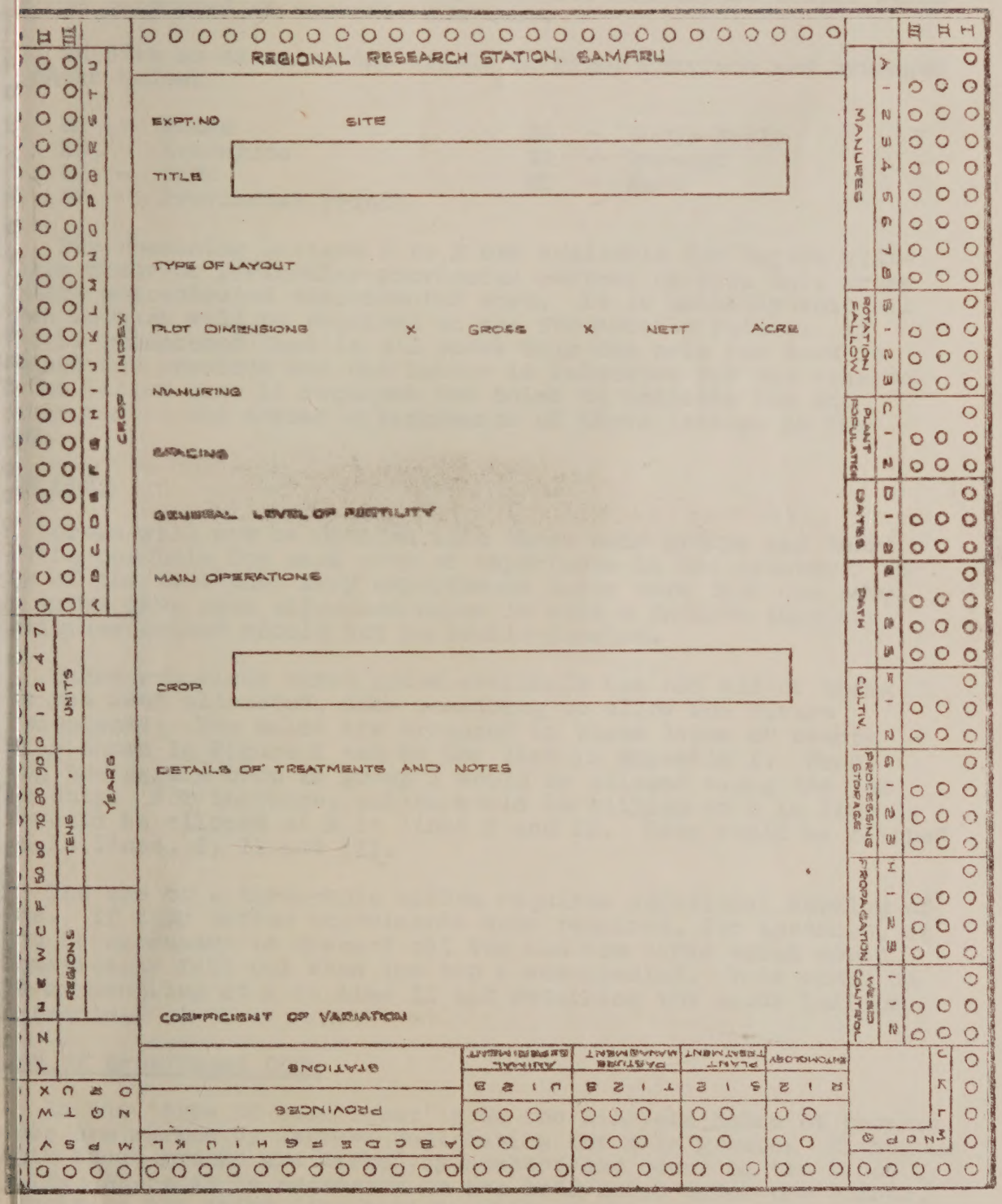
Details of the modifications introduced and the methods of using them are given below.

FIGURE 1



THE OLD CARD

FIGURE 2



THE NEW CARD

ovince and Station Code

One hole has been allowed for each of the twelve provinces the Region and these are marked A to L. Twelve remaining tters of the alphabet are reserved for stations in the Provinces. e letter P is reserved in every case for Provincial trials which e not conducted at specific stations.

To cite an example, the trials in Niger Province are arranged shown below:

EM - Mokwa
EN - Kontagora
EO - Bida
EP - Provincial Trials
EQ - Abuja-Kwali
ER - Badeggi
ET - Zuru

The remaining letters U to X are available for future allo- ation whenever particular provincial centres develop into areas f more concentrated experimental work. It is unlikely that all hree letters will be required in the foreseeable future. It ust be remembered that in all cases only one hole per card is unched for province and one letter is indicated for the station. n the latter case it requires two holes to indicate the one etter due to the corner arrangements of these letters on the ard.

rop Code

Crops will now be divided into three main groups and there ill be one hole for each crop of importance in the country. In iew of the fact that many experiments cover more than one crop, he crops have been allocated holes in such a fashion that any articular letter should not be double-punched.

There are sixty three holes available but not all of these ave yet been allocated, some remaining to allow for future levelopments. The holes are arranged in three lines of twenty ne as shown in Figure 2 and in the list in Appendix I. When sing the card a crop in group I would be clipped along the top ine only. For instance, cotton would be clipped at K in line I. ea would be clipped at K in lines I and II. Bees would be clipped t K in lines, I, II and III.

The use of a three-hole system requires additional sorting of ards. If only cotton experiments were required, for instance, it ould be necessary to discard all tea and bee cards which would utomatically fall out when the top K was needled. This would be one by needling at K on line II and retaining the cards left on he needle.

ypes of Experiment Code

In the 'type of experiment' code the nineteen holes at present n use are marked by letters designating the main groups. Divisions ithin these groups are marked by numbers and occur on two lines I nd II. Where it is necessary to use both holes under one number, he hole on the third line must be clipped out to indicate that both pper holes have been marked. This is necessary to differentiate etween types of experiment on the second line and the cases where oth holes are used.

The aim should be to reduce the number of clippings to the ssential minimum. For instance, storage experiments may be of ntomological interest but unless the main treatments are entomo- ogical, the card should not be clipped for entomology. Details f arrangement are shown in the appendix and in Figure 2.

The possibility of using a decimal system has been fully explored and has been rejected as no convenient decimal system exists that will cope with the multiple punching required in t type of work. By providing holes for every type of experiment there can be no possibility of double punching. The latter co arise for instance, with a decimal system when a number of orga and inorganic manures are including in one rotation experiment.

Years Decimal

A classification for years has been reintroduced as, with ever increasing volume of information now being recorded, it ha been found useful to be able to sort experiments by years. Thi of particular value when "good years" or "bad years" are brough forward in discussions. By having the cards classified under t heading, a quick assessment can be made of crop yields under an particular set of climatic conditions.

The year decimal code uses the standard decimal system for the units but the tens have been simplified by inserting the figures 50 and 90. This permits a fifty year spread. This sho present no problem after the year 1999 as a different colour of card can then be introduced to differentiate between the two centuries and the figures 00 to 40 can be inserted on the new ca

In the units, the figures 0, 1, 2, 4, 7 are used and two ho are clipped for each figure required. Only one date ever occurs on any given card thereby eliminating the possibility of double punching. A description of the decimal system may be found in many standard text books(2).

In the Samaru system the year clipped is that in which the experiment was conducted and not necessarily that in which it wa originated. In our system of numbering experiments the coding will not indicate the year in which the experiment was started, the actual number of the experiment or whether it is a repeat or continuous trial, though this will always be included in the typ information within the body of the card. An example is given be

BQ4(59)	clip for 59
BQ4(59)R60	clip for 60
BQ4(59) 61	clip for 61.

Use of the New System

In using a clip card system it is essential that only the relevant information should be punched on the cards. Non-experimental treatments should never be punched, e.g. in a groundnut variety trial which has had a standard dressing of superphosphate the card would not be punched for inorganic fertilizer or phospha

In some cases where experimental treatments are applicable t two or more of the classifications under types of experiment, the card may be clipped for each, e.g. a groundnut spacing trial designed to provide information on the effects of spacing on the yield of nuts and on the incidence of rosette disease, is pertine to three groups, plant population, plant pathology and entomology and all three groups would be clipped on the card.

Numbering of Experiments

The method of numbering experiments has been described by Gisborne(1) but a quick review is given here. Until now experiments have been classified by stations, each having a separate letter. The letter is followed by a serial number and this is followed by the tens and units of the year, e.g. (59) for 1959.

Where an experiment is continued on exactly the same site in e following years, the current year is added after the original ar, e.g. experiment A1 6(58) continued in 1959 becomes A1 6(58)59. is applies chiefly to residual trials and longterm trials.

Where an experiment is repeated on a different site, with or thout minor modifications, the letter R is inserted in front of e current year, e.g. experiment V9(57) becomes V9(57)R58 in 1958.

With the introduction of the province and station code as scribed in this paper, experiments will not be classified ier these two headings and will be prefixed by two letters in- ead of just one. A trial at Osara, for instance, which would ve been J21(60) will now be JO21(60).

With the exception of experiments at the Regional Research ation, all experiments will now be numbered serially witnin a ovince, not by stations. This will minimize possible errors en referring to experimental numbers.

plication of the Samaru System

It should be mentioned here that the Samaru system is now ing adopted by the Federal Research Organization in Nigeria and being extended to cover not only the Federal experimental ogramme but also those of the other Regions of Nigeria.

mmary

Modifications which are being made to the system of keeping perimental records at Samaru are described together with some the limitations of the old system. A review is given of the thod of numbering experiments.

knowledgements

The authors wish to acknowledge the work done on clip cards Messrs. Freeman and Gisborne. Thank are also due to essrs. Copeland-Chatterson Co. Ltd. for the discussion and ivice with which they favoured us.

References

) GISBORNE, J. H. (1958). Agricultural experimental records. Northern Nigeria. Trop. Agric. 35, pp. 241-50.

2) YATES, F. (1953). Sampling Methods for Consuses and Surveys. 2nd ed. Charles Griffin.

Addendum

Since this paper was written a thirteenth Province has been ormed in the Region. One of two unallocated holes will be used or this Province and it will be allocated the letter Y.

APPENDIX I

Crop Code Index

	I	II	III
o o o A	Sorghum	Shea	
o o o B	Millet	Mango	Pigs
o o o C	Wheat	Oil palm	Fish
o o o D	Maize	Citrus	Birds
o o o E	Rice	Coffee	Okra
o o o F	Sugar cane	Cocoa	Sheep and goat
o o o G	Groundnuts	Rubber	
o o o H	Soyabean	Banana	Cattle
o o o I	Sesame	Pineapple	Cocoyam
o o o J	Tobacco	Kola	Chinese yam
o o o K	Cotton	Tea	Bees
o o o L	Rama	Fodder legumes	Native vegetabl
o o o M	Urena	Bush fallow	Exotic vegetabl
o o o N	Cassava	Hedge plants	Beans
o o o O	Yams	Fodder canes	Date palm
o o o P	Sweet potatoes	Shade plants	Safflower
o o o Q	Cowpeas	Grass, planted	Poultry
o o o R	Pigeon pea	Sunflower	Tetracarpidium
o o o S	Potatoes	Ornamentals	Proso(Panicum m
o o o T	Tomatoes	Castor	Tamba - (Finger Eleusine coroca.
o o o U	Onions	Sunn hemp	Oats

APPENDIX II

Types of Experiments Code Index

o o o

	I	II	III
o A	Manures		
o o o 1	F.Y.M.	Residual	Both
o o o 2	Compost	Residual	Both
o o o 3	Green manure	Residual	Both
o o o 4	Nitrogen	Residual	Both
o o o 5	Phosphate	Residual	Both
o o o 6	Potash	Residual	Both
o o o 7	Minor elements	Residual	Both
o o o 8	Other fertilizer	Residual	Both
o B	Rotations and Fallows		
o o o 1	Fallows, type	Fallows, length	Both
o o o 2	Manurial rotation	Arable fallow rotation	Both
o o o 3	Crop sequence		
o C	Plant Populations		
o o o 1	Spacing	Seed rate	Both
o o o 2	Thinning	Transplanting	Both
o D	Dates		
o o o 1	Planting dates	Harvesting dates	Both

	I	II	III
o o o 2	Other treatment		
o E	Plant Pathology		
o o o 1	Seed dressing		
o o o 2	Chemical control	Cultural control	Both
o o o 3	Biological control	Microbiological factor	
o F	Cultivations		
o o o 1	Methods of cultivation	Times of cultivation	Both
o o o 2	Mulching	Surface cultivations	Both
o G	Processing and Storage		
o o o 1	Storage temperatures	Storage treatments	Both
o o o 2	Taste test, row	Taste test, processed	Both
o o o 3	Silage making	Silage analysis	Both
o H	Propagation		
o o o 1	Vegetative propagation	Mist propagation	Both
o o o 2	Seed tests	Seed germination	Both
o o o 3	Transplanting	Root stocks	Both
o I	Weed Control		
o o o 1	Pre-emergence	Post-emergence	Both
o o o 2	Plant parasites	Brush control	Both
o J	Variety Trials		
o K	Irrigation Studies		
o L	Fadama Culture		
o M	Costings		
o N	not yet allocated		
o O	Mechanical Equipment		
o P	Interplanting		
o Q	not yet allocated		
o R	Entomology		
o o o 1	Chemical control	Cultural control	Both
o o o 2	Biological control	Field observations	Both
o S	Plant Treatment		
o o o 1	Pruning & topping	Harvesting treatment	Both
o o o 2	Growth regulator		
o T	Pasture Management		
o o o 1	Pasture establishment	Cultural treatments	Both
o o o 2	Brush control	Burning	Both
o o o 3	Carrying capacity		
o U	Animal Experiments		
o o o 1	Animal management	Animal breeding	Both
o o o 2	Animal nutrition	Nutritive value of fodders	Both
o o o 3	Animal diseases	Animal parasites	Both

Experimental Station Coding

	A	B	C	D	E	F
M	Zaria Samaru Agronomist	Katsina Katsina	Bauchi Bauchi	Plateau Riyom	Niger Mokwa	Bornu Maiduguri
N	Samaru Botany	Kafinsoli		Lowlands	Kontagora	
O	Samaru Cotton	Daudawa			Bida	
P	Zaria Province	Katsina Province	Bauchi Province	Plateau Province	Niger Province	Bornu Province
Q	Shika	Daura			Abuja-Kwali	
R	Maigana				Badeggi	
S	Zonkwa					
T	Entomologist				Zuru	
U	Samaru School					
V	Soil Fertility					
W						
X						

Experimental Station Coding (Continued)

	G	H	I	J	K	L
	SOKOTO	ADAMAWA	BENUE	KABBA	KANO	ILORIN
M	Birnin Kebbi	Kofare	Yandev	Kabba	Kano	Ilorin
N	Gusau				Dambatta	
O	Kasarawa & Sokoto local		Mbatie T.U.F.	Osara	Gumel	
P	Sokoto Province	Adamawa Province	Benue Province	Kabba Province	Kano Province	Ilorin Province
Q						
R						
S						
T						
U						
V						
W						
X						

Experimental Station Coding (Continued)

G H I J